

REMARKS

Reconsideration and allowance of this application are respectfully requested in light of the above amendments and the following remarks.

Fig. 2 has been amended to include a legend of "related art." Withdrawal of the objection to Fig. 2 is therefore considered to be warranted.

Claims 30 and 41 have been amended, and claim 43 has been newly added.. Support for the amendments is provided for example in Fig. 8 and paragraph [0061] of the published specification. (It should be noted that references herein to the specification and drawings are for illustrative purposes only and are not intended to limit the scope of the invention to the referenced embodiments.)

Claims 30-42 stand rejected, under 35 USC §103(a), as being unpatentable over Walton et al. (US 2003/0081538) in view of Arai et al. (US 6,456,607), Sakoda et al. (US 2002/0118659), and Baum et al. (US 2003/0112744). The Applicant respectfully traverses these rejections based on the following points.

Claim 30 defines an OFDM-CDMA transmitting apparatus that spreads a specific symbol with a larger spreading ratio than that applied to other symbols, assigns a degree of multiplexing to the spread specific symbol that is smaller than that assigned to the other spread symbols, and distributes the chips of the spread specific symbol to different time-domain carriers. The claimed subject matter supports selecting the spreading ratio of data and the amount of multiplexing applied to the spread data so as to achieve compatibility between spectral efficiency and error rate characteristics (see specification page 5, lines 11-28).

IN THE DRAWINGS

A replacement sheet for Fig. 2 is submitted herewith, with a Submission of Proposed Drawing Amendment.

The Office Action acknowledges that Walton and Arai do not disclose the Applicants' claimed subject matter of spreading a specific symbol with a larger spreading ratio than applied to other symbols and applying a degree multiplexing to the spread specific symbol that is smaller than that applied to the other spread symbols (see Office Action page 5, third paragraph). To overcome this deficiency, the Office Action proposes that Sakoda discloses a multicarrier transmitter that: (1) increases transmission power for symbols spread by a particular spread code, (2) performs parallel multiplication corresponding to a bit rate increase, and (3) performs multiplexing (see page 5, lines 4-9 of penultimate paragraph).

However, Sakoda's disclosure of (1) increasing transmission power for symbols spread by a particular spread code, (2) performing parallel multiplication corresponding to a bit rate increase, and (3) performing multiplexing differs from and does not teach or suggest the Applicant's claimed subject matter of spreading a specific symbol with a larger spreading ratio than that applied to other symbols and applying a smaller degree of multiplexing to the spread specific symbol.

Simply stated, the Applicant's claimed specific symbol has both a larger spreading ratio and a smaller degree of multiplexing than that applied to other symbols. Sakoda does not disclose this subject matter, and Baum is not cited for supplementing the teachings of Sakoda in this regard.

Accordingly, the Applicant submits that the teachings of Walton, Arai, Sakoda and Baum, considered individually or in combination, do not render obvious the subject matter defined by claim 30. Therefore, allowance of claim 30 and all claims dependent therefrom is deemed to be warranted.

To promote a better understanding of the patentable distinctions of the claimed subject matter over the applied references, the Applicant submits the following additional remarks.

Features of claim 30 include distributing the chips of a specific transmit symbol with a reduced number of multiplexing or the chips of a specific transmit symbol with an increased spreading ratio only to subcarriers in the time domain.

Arai discloses changing the number of data multiplexing according to the significance of data (see Arai, col. 6, lines 51-57). Baum discloses time domain spreading (see Baum, paragraph [0016]).

However, Arai does not disclose the Applicant's claimed subject matter of distributing a specific transmit symbol only to subcarriers in the time domain. Baum discloses time domain spreading but does not disclose spreading the chips of a specific transmit symbol in the time domain.

Even if it were assumed that Arai and Baum suggest time-domain spreading all transmission data whose number of multiplexing is changed according to a significance of the data, nevertheless, Arai and Baum, considered alone or together, do not suggest the above-noted feature of distributing the chips of a specific transmit symbol with a reduced number of multiplexing or the chips of a specific transmit symbol with an increased spreading ratio only to subcarriers in the time domain.

In an exemplary, non-limiting, embodiment of the invention illustrated in Fig. 8, the chips of a specific transmit symbol are spread two dimensionally without widening the frequency band. Thus, transmit symbols other than the specific transmit symbol are transmitted in one burst period from time t_1 to time t_2 using subcarrier groups #1 to #5m and the specific transmit

symbol is transmitted in two burst periods from time t1 to time t2 and from time t2 to time t3 using subcarrier groups #1 to #5m.

Walton and Sakoda similarly fail to disclose the above-noted features of the claimed invention.

Thus, for these further reasons, the Applicant submits that the teachings of Walton, Arai, Sakoda and Baum, considered individually or in combination, do not render obvious the subject matter defined by claim 30. Therefore, allowance of claim 30 and all claims dependent therefrom is deemed to be warranted.

In view of the above, it is submitted that this application is in condition for allowance, and a notice to that effect is respectfully solicited.

If any issues remain which may best be resolved through a telephone communication, the examiner is requested to telephone the undersigned at the local Washington, D.C. telephone number listed below.

Respectfully submitted,

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